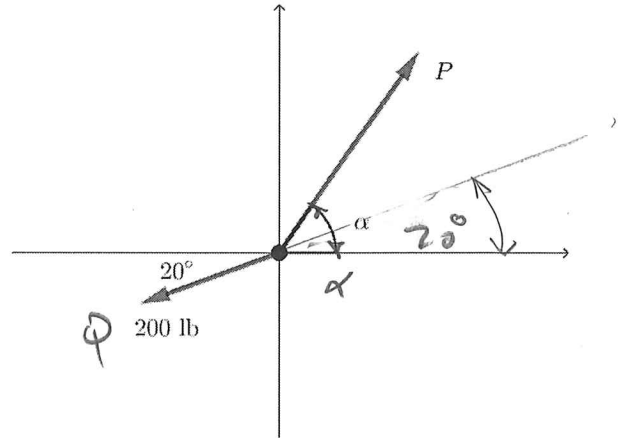
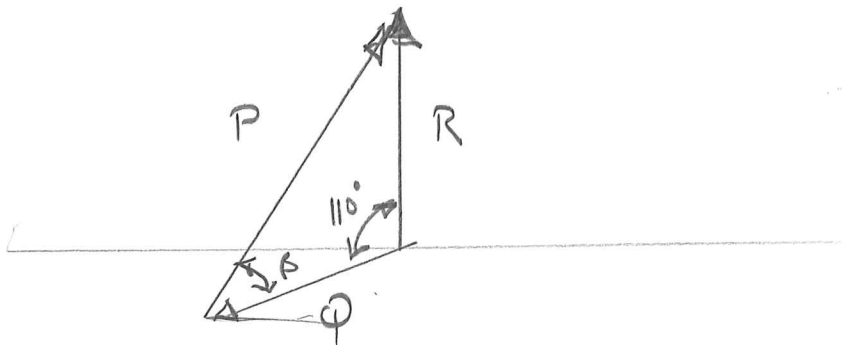


Determine the magnitude and direction of force P such that the resultant of P and the 200 lb force is a 250 lb force directed straight up.



$$Q = 200 \text{ LB}$$

$$R = 250 \text{ LB}$$



LOC

$$P^2 = Q^2 + R^2 - 2QR \cos 110^\circ$$

$$P^2 = 200^2 + 250^2 - 2(200)(250) \cos 110$$

$$P^2 = 136702$$

$$P = 369.7 \text{ LB}$$

LOS

$$\frac{R}{\sin \beta} = \frac{P}{\sin 110}$$

$$\sin \beta = \frac{R \sin 110}{P}$$

$$\beta = 39.45$$

$$\alpha = \beta + 20^\circ$$

$$\alpha = 59.45^\circ$$